Probability Review #1

1. You are at Macy's and you have a choice of 7 pairs of shoes, 9 pairs of socks, 11 shirts, and 15 pairs of pants. How many different outfits do you have to choose from?

2. How many different 7-digit phone numbers can be formed if the first 5 digits can be any number and the last two digits cannot be 8.

3. How many 8-character passwords can be formed if the first 4 characters are non-repeating letters and the last 4 characters are numbers?



4. How many different 7-digit phone numbers can be formed if the first digit cannot be 1 or 2, and no digit can be repeated. 8 9 8 7 6 5 4 - 483840

5. A six sided dice is rolled 180 times. The table below represents the data distribution of the dice.

# on die	1	2	3	4	5	6
Times rolled	30	45	30	28	24	23

- a) What is the theoretical probability of rolling a 3?
- b) What is the theoretical probability of rolling an even number?

c) What is the experimental probability of rolling a 6?

d) What is the experimental probability of rolling a number greater than 3?

$$\frac{28}{180} + \frac{24}{180} + \frac{23}{180} = \frac{75}{180} = \frac{5}{12}$$

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6. When three dice are rolled, what is the probability that the first two show a 3 and the third shows an odd number? $P(3) P(3) P(0dd) = \frac{1}{6} \cdot \frac{1}{6} \cdot \frac{3}{6} = \frac{3}{2110} \mp \frac{1}{120}$ 7. When three dice are rolled, what is the probability that one die is a multiple of 3, one die shows an even number, and one die shows a 5?

$$P(\text{multiple of 3}) \cdot P(\text{even}) \cdot P(5) = \frac{2}{6} \cdot \frac{3}{6} \cdot \frac{1}{6} = \frac{2}{216} \cdot \frac{3}{36}$$

8. What is the probability of drawing, without replacement, 2 clubs, and then a diamond from a standard deck of cards?

$$P(l|ub) \cdot P(l|ub) \cdot P(d|umund) = \frac{13}{52} \cdot \frac{12}{51} \cdot \frac{13}{50} = \frac{2028}{132600}$$

9. What is the probability of drawing, without replacement, an Ace, then a 7, and then another Ace from a standard deck of cards?

$$P(Ace) \cdot P(r) \cdot P(Ace) = \frac{4}{52} \cdot \frac{4}{51} \cdot \frac{3}{50} = \frac{48}{132600} = \frac{2}{5525}$$

10. Jenny has a stack of playing cards consisting of <u>6 hearts</u>, <u>8 spades</u>, and <u>3 clubs</u>. If she selects a card at random from this stack, what is the probability that it is a hear or a club?

$$P(heart) + P(lub) - P(both)$$
 for $1 - 17 - 17$

11. Dave has a standard deck of playing cards. He picks one card out of the deck. What is the probability that it is a red card or a diamond?

$$\frac{26}{52} + \frac{13}{52} - \frac{13}{52} - \frac{26}{52} = \frac{1}{52}$$

12. Bobby has a standard deck of playing cards. He picks one card out of the deck. What is the probability that it is a 9 or a black card?

$$P(q) + P(black) - P(both)$$

 $\frac{4}{5a} + \frac{26}{5a} - \frac{2}{5a} = \frac{28}{5a} = \frac{7}{13}$

13. Frank has a standard deck of playing cards. He picks one card out of the deck. What is the probability that it is a King or a spade?

$$P(King) + P(Spade) - P(both)$$

 $\frac{4}{52} + \frac{13}{52} - \frac{1}{52} - \frac{16}{52} = \frac{14}{13}$